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## Distemper in the Fitch.

*By*

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Since fur traders are showing an active interest in active immunisation against distemper in the fitch—a ferret-like animal bred for fur—and distemper prophylactic is issued only to veterinary surgeons, the following note may be of interest.

Distemper, as a disease of ferrets, has been long recognised, but it was not until Dunkin and Laidlaw (1926) carried out their experiments in connection with distemper of dogs that it was definitely shown that the distemper which affects ferrets is due to the same cause as that which affects dogs. These authors proved definitely that the disease called distemper in dogs is caused by the action of a filterable virus and that the same virus will infect ferrets, producing the well-known symptoms of distemper. They showed, furthermore, that an infected dog could infect the ferret and *vice versa*.

Our attention was drawn to distemper in the fitch by Mr. Henry Gray, M.R.C.V.S., and we have made observations and experiments on that animal with regard to its relationship to distemper of the dog and ferret. Because of the close origin of the ferret and the fitch, we were not surprised when we showed that the findings with regard to distemper of the ferret applied equally to the fitch. The fitch is susceptible to true canine distemper and the disease can be set up by the injection of material from the dog or ferret containing distemper virus, and from a naturally infected fitch the virus can be recovered and will, when injected into or brought in contact with a susceptible dog or ferret, set up true distemper, as evidenced by the symptoms produced and by the recovery of the virus from the tissues.

### SYMPTOMS.

Fitch usually begin to show symptoms of the disease in about 10-12 days after exposure to virus infection, although in some cases a slightly longer period may elapse. We have records of a period of 16 days elapsing before definite symptoms were evident, but on the whole it is rare to find the period extending beyond the twelfth day. This is of considerable importance to ferret breeders and dealers in that it means that, if a period of 12 days or at the most 16 days has elapsed since fitch were exposed to infection and no symptoms have developed, the animals have failed to become infected and that much of the danger arising from such exposure is over. In most fitch until the 10th or 12th day following infection little alteration in the normal habits or appearance of the animal is showed. On the 10th-12th day a watery appearance of one or both eyes is observed and, on close examination, the eye itself will be found red and inflamed. At the same time a watery discharge from the nose may be present. Soon the eyelids begin to swell and by the next day the discharge from the eyes is thick and yellowish. By this time, also, a slight swelling of the chin will be observed, and on close examination small vesicles containing fluid will be found on the chin, especially at the edges of the lower lip. Very soon the discharge from the eyes has become so thick and sticky that the eyelids remain stuck together and the animal is unable to open the lids. The vesicles on the chin soon give place to brownish-coloured dryish crusts. The fitch becomes weak and then the coat stares; all food is refused and the animal lies curled up in the darkest part of its cage. These symptoms progress until the fourth, fifth, or even sixth day, when the majority of affected fitch are found in a state of collapse and death takes place soon after. Occasionally, symptoms of a nervous type are seen; these are twitchings of the head and sometimes of the whole body, the animal is unsteady on its legs when made to move, and there may also be violent generalised convulsions. Distemper in the fitch may be complicated with infection of the lungs or intestine (pneumonia or enteritis) in which case death may occur very soon after the first symptoms are observed and diarrhœa or dysentery may be present. In uncomplicated cases, however, the above is the usual picture presented.

All infected fitch do not die; a few recover, especially if the period elapsing between the infection and the presentation of symptoms is over 10-12 days. Such recovered animals are highly immune and can be exposed to heavy infection without developing any symptoms of distemper. They may, however, harbour the virus of distemper and, while themselves remaining healthy, may infect other susceptible animals and so give rise to a new outbreak.

*Post-mortem* examination may reveal little abnormal except the altered appearance of the eyes and skin of the lips. If pneumonia or enteritis complicated the true disease, marked evidence of their existence will be found, but neither condition is diagnostic of infection with the distemper virus. The only sure way of diagnosing distemper in the fitch is to send the affected animal, alive if possible, to a laboratory in which facilities exist for the demonstration of the virus. We would point out here that the ferret and fitch are susceptible to and suffer from diseases other than distemper and that such may occur in epidemic form causing many deaths. They must not be confused with distemper.

### TREATMENT.

Treatment of severely affected fitch is of little avail. The fitch breeder or dealer should aim at prevention, which can now be successfully carried out. Laidlaw and Dunkin (1928) showed that it was possible to immunise ferrets against distemper by injecting a dose of vaccine made from tissue of infected ferrets, following by a small dose of

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living virus. The first injection (vaccine) is harmless but produces in the animal a temporary state of resistance and the living virus given at the appropriate time transforms that state of resistance into a solid lasting immunity. Ferrets so treated are immune for many months and probably for life, resisting injection of large doses of virus, as well as exposure to violent outbreaks of the naturally occurring disease. We fully confirm these findings with regard to the ferret; all our breeding stock has long been immunised by that method.

We have shown that this method of immunisation is equally successful in the fitch. We have carried out many experiments in the laboratory and the method has been subjected to field trials. These experiments show that the injection of susceptible fitch with a dose of vaccine prepared from ferret tissue, followed in 10-14 days by a small dose of living virus renders the animal sufficiently immune to resist massive doses of virus given a month or more later and to escape infection when housed with fitch or ferrets badly infected with distemper. We have no reason to doubt that the immunity will be lasting. Laidlaw and Dunkin (1928) state: "We feel justified in concluding that we are able to immunise approximately 90 per cent. of any given batch of healthy ferrets at will . . ." Up to the present we have been successful in immunising all fitch treated, as shown by the tests we have applied. Time will show whether the results obtained in the laboratory and small field trials will be borne out in general field work. We have no reason to suppose otherwise.

In dog distemper an efficient hyper-immune serum has been prepared and is useful in treating early cases of the disease and in preventing the development of symptoms in dogs exposed to infection. This serum has been used in ferrets and fitch. We have not been able to save fitches with any serum yet available if injected after symptoms have developed, but serum will prevent the appearance of symptoms in animals exposed to infection if injected within a day or two of the exposure.

### Conclusions.

(1) Distemper of the fitch, the ferret, and the dog is caused by the same filterable virus.

(2) The symptoms of distemper in the fitch are similar to those in the ferret.

(3) Fitch can be successfully immunised against distemper by the injection of a dose of vaccine, followed in 10-14 days by a small dose of living distemper virus.

(4) Hyper-immune dog serum may be of some value in preventing the development of distemper in the fitch or ferret if injected soon after exposure to infection.

[Note.—In the immunising of the fitch or ferret with vaccine or virus, it is essential that the animals have not been exposed to infection for at least a fortnight before treatment is begun, and are kept rigidly isolated during the whole course.]

We desire to express our best thanks to Mr. Vyvian Thomas, Kingswood, Harrietsham, Maidstone, Kent, for supplying the fitch on which our original observations were made, and for co-operating with us in the field trials.

### References.

Dunkin, G. W., and Laidlaw, P. P., *J. Comp. Path. and Therap.* 1926. xxxix. 201.

Laidlaw, P. P., and Dunkin, G. W., *J. Comp. Path. and Therap.* 1928. xli. 1.

# Discussions on Papers Presented to Congress.

## No. 6.—The Parasitic Diseases of Poultry.*

*By*

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The final clinical session of Congress, N.V.M.A., at which the above paper was discussed, was held under the chairmanship of Professor J. F. Craig (Dublin), in St. Andrew's Hall, Norwich, at 11 a.m., on Thursday, August 27th.

At the commencement of the proceedings the **Chairman** observed that the subject for discussion at that meeting was "The Parasitic Diseases of Poultry." Before calling upon Professor Matheson to open the discussion, he had been asked to say that Mr. Taylor desired to amplify some of the points which he had raised in the paper, and he (the Chairman) therefore had much pleasure in asking Mr. Taylor to address them.

**Mr. E. L. Taylor**: This paper is an attempt to present as fair an account of the present position of our knowledge of the causation of disease in poultry by helminths as the limited space would allow.

Perhaps a word or two by way of explanation or apology are indicated lest it should be thought that by confining the discussion to helminthic diseases I have taken a liberty and ignored the title which has been given to me. No one would expect a paper on the "Parasitic Diseases of Poultry" to deal with diseases caused by bacteria or molds, in spite of these organisms having every right to be regarded as parasites. Nor, perhaps, would an account of the protozoan parasites be looked for. But, on the other hand, it might be thought that the arthropod parasites certainly ought to be included, as if anything is a parasite surely a louse is.

The fact of the matter is that the word "parasitology" has undergone considerable change of meaning during the last few years and the term "parasitic disease" allows of a variety of interpretations. The old-time parasitologist could deal with all that was known of parasitic protozoa, arthropods and helminths, but because of the accumulation of knowledge this is now quite impossible, and therefore specialisation became necessary.

In most institutions the first to split off and specialise to a higher degree was the medical and veterinary entomologist; parasitic protozoa and helminths remaining grouped together under the heading of "parasitology," that term thus having a more restricted meaning than before. As a result of a further growth of knowledge the subject has again been subdivided and the word "parasitology" has lost its old significance as a specialist's subject.

We now have the specialist in medical and veterinary entomology, protozoology and helminthology, each with a special knowledge of his own line and only a general knowledge of the other branches of animal parasitology, so that there was a certain amount of freedom allowed me in interpreting the meaning of the title of this paper.

* We regret that circumstances have necessitated the postponement of publication of Discussion No. 5—that on Captain Brayley Reynolds' paper on "Sterility."

The work on which I am engaged particularly concerns the helminths, and as this is a most important group and provides more than enough material for one short paper, I have confined my remarks to these parasites and tried to stimulate a discussion which will help us all to get a truer idea of their comparative importance to veterinary science.

The scheme by which these Congress papers are published some four or six weeks before their discussion, is no doubt in many ways a very excellent one, but the numerous advantages appear to be very one-sidedly distributed. All are able to read the papers at leisure and carefully prepare most cunning criticisms to bring up during the course of the discussion, and it tends to go hard with the reader of the paper, who may most unexpectedly find himself caught out.

A few years ago the subject of worms in chickens was not calculated to enthuse the veterinary practitioner, but times are changing, poultry farming is rapidly becoming more important, disease is the great controlling factor in the industry and sound advice on disease will be increasingly in great demand. Although worm diseases may rarely be responsible for heavy mortality, they are probably of considerable importance to poultry, and success in poultry-keeping very largely depends upon ability to eradicate or control helminthic disease. The veterinary surgeon's concern is with diseased birds, however, and it must be under very exceptional circumstances that he would open a healthy carcass to look for worms. That indicates that he has a wrong idea in regard to this matter and explains how it is that one rarely sees a mention in the literature of the normally innocuous nature of many worms.

With some measure of truth it may be said that the young science of helminthology is at present in a similar position to that held by the science of bacteriology in its young days, when the germ theory of disease was still a matter of controversy. The bacillus had to be isolated and described, inoculated into the susceptible animal and produce disease, and the case in this way be experimentally proved before the parasite could be definitely listed with the pathogens. Experimental data of this kind is very urgently needed for all the commoner members of that large group of poultry parasites which do not produce any definite and readily recognisable disease, the direct object of the experiments being to determine what harm may result from heavy infestations with a species, and what intensity of infection is necessary to produce disease.

It is only 15 years since the American workers, led by Hall, first took up the investigation of anthelmintics, with the result that out of a disorderly confusion of specifics, vermicides, vermifuges and nostrums which could be numbered by the score, we now know what has anthelmintic effect and what not, and what worms will respond to our treatment and what not—and all but a bare dozen of these drugs can be dispensed with.

The present confusion with regard to the causation of disease by worms is just as bad as what obtained in the field of anthelmintics and proper investigation is just as urgently needed and would doubtless give as valuable results: all that is wanted is the time and the workers to do it.

The usual arrangement of a paper under such a title as this is one which follows the classification of the parasites, each of which receives some mention with reference to structure, relation to other parasites, life history, association with disease, treatment and prevention. That might have been a much more straightforward and orderly arrangement, but I think it could only lead to rather a wandering discussion and, furthermore, by repeating the same reports of disease association with worm infestation, we should not have made much progress.

It is my aim to initiate a discussion which will help us to estimate the value of the information which we have on poultry worms, get a better idea of the importance of these parasites to poultry husbandry, to indicate the kind of research which is required and what line of effort can be taken at the present time in usefully applying knowledge which we already have: in other words a discussion which will help us to appreciate what the worm situation in poultry really is and to ascertain the position of our knowledge of helminthic disease in poultry at the present time.

Professor **D. C. Matheson**, F.R.C.V.S., D.V.S.M. (Vict.), Professor of Pathology, Bacteriology and Meat Inspection, Royal (Dick) Veterinary College, Edinburgh, before opening the discussion upon Mr. Taylor's paper, expressed his appreciation of the honour of having been asked to open a discussion at this Congress.

In opening, Professor Matheson said:—

Mr. E. Leonard Taylor's paper upon the Parasitic Diseases of Poultry will be scrutinised with interest, I venture to think, by at least four classes of persons: firstly, the veterinary practitioner anxious to obtain the most recent information on a subject upon which he is being increasingly often consulted; secondly, by the editors of the Poultry Press, alert in the interests of their clients; thirdly by the poultry pathologist, wishful to obtain the latest information from the helminthologist as to the importance he should attach to the presence of the worms which he frequently encounters at the *post-mortem* examination of birds, and finally by the veterinary student who will find that he has to add now to the list of parasites with which he must be familiar, a number of considerable importance in poultry. Along somewhat different lines these four classes of scrutineers will approach the paper with certain questions in their minds—these questions may be epitomised possibly as follows:—

1.—Which is this parasite?
2.—How may we recognise it?
3.—What does it do?
4.—What must we do?

Methods of recognition; knowledge of its effects; acquaintance with adequate remedies—these are the details we wish to have in connection with any parasite of poultry.

Let us scrutinise Mr. Taylor's paper from the point of view of these questions:—

1.—Which is this parasite? In seeking an answer to our first question, "Which is this parasite?" and to our second, "How may it be recognised?" we must go beyond the limits of the present paper in which Mr. Taylor has confined himself to general principles illustrated by certain definite examples of disease associated with the presence of worms and remind ourselves that the essayist has

already given us interesting information elsewhere, pertinent to our first question and of value in connection with our second one, while Dr. T. W. M. Cameron, in the same issue of the Journal, contributes some valuable notes that will be referred to at a later stage (Taylor[1] and Cameron[2]).

Reference may also be made to the paper by Dr. E. B. Cram (Cram[3]); Dr. Kaupp's (Kaupp[4]) and other text-books may also be consulted for answers to these two questions.

Consultation is necessary for, as Mr. Taylor reminds us, "Some 90 different species of parasitic worms have been described in the fowl." Other domesticated birds have their own.

In connection with our first question, Mr. Taylor says: "With comparatively few exceptions we cannot diagnose helminthiasis." He is, of course, writing of the disease, if disease exist; the parasite isolated can be classified by the helminthologist. Mr. Taylor, I understand, means that the symptoms of worm infestation are often too general to permit of a confident—or even perhaps of a tentative—diagnosis, but I would like to ask him if, given a fowl or a number of fowls which are generally unthrifty and whose condition may suggest worm infestation among other possible causes of their condition, he would consider it practicable to examine the droppings of the birds for the presence of worms or of eggs and if so, are the eggs of the commoner intestinal worms sufficiently distinctive in character to permit of a diagnosis. One would like also to know if there are any characteristic changes in the blood in cases of worm infestation, eosinophilia, etc., though that perhaps is a question rather for the pathologist himself, or, in these days of specialisation, for the helminthologist. Now with regard to our third question: "What does it (the parasite) do" (in the body of the fowl and elsewhere)? Towards an answer to this question Mr. Taylor selects two examples in which more or less definite disease is associated with the presence of worms: one of these is comparatively common in Great Britain, though examples do not come to our laboratory in Scotland as often as one might expect, possibly because the poultry keeper himself or herself can recognise the condition and can deal with it fairly satisfactorily, in other words, Syngamiasis, or "Gapes," as it is usually called, is well known and the symptoms relatively significant; but in passing I would like to ask Mr. Taylor if the symptoms are to be attributed mainly to the mechanical blocking and irritation of the trachea or whether there is any reason to believe that the worms have any toxic effect; the development of an age-immunity, he says, has no connection with any previous infection.

Now to consider the second example:—The present writer (Matheson[5]) has shown that impaction of the oviduct with or without a terminal peritonitis is one of the prevailing diseases of fowls in Great Britain. By impaction of the oviduct he means not simply the condition of obstruction of the oviduct—egg bound—as it is commonly called, due to a difficulty the hen may have in passing an extra large or malformed egg, or to some abnormality in the structure of the oviduct, but rather a condition of obscure ætiology in which a quantity of egg material, exudate, etc., accumulates in the oviduct over a period—it may be of months—until a massive impaction results, the abdominal cavity becoming filled up with the enormously enlarged oviduct and the viscera pressed upon and even partially displaced. With this condition in mind the writer read with alertness the account of the trematode infestation of the oviduct. Were we on the track of a cause? "Up to the present there are no records of its (Prosthogonimiasis) occurrence in Great Britain." So writes Mr. Taylor, and we are left, not lamenting certainly, but to seek another cause for this common and formidable disease of the laying fowl. I recall that Dr. T. W. M. Cameron, in the article referred to above, mentions this parasite and says: "It is rather a repulsive object to find in the breakfast egg," but he does not say where he was when he opened the egg. I should like to ask Mr. Taylor if he thinks it likely that a more extended observation of cases of disease of the oviduct among poultry in Great Britain would be likely to reveal the presence of this trematode or whether he thinks it has not been recorded because it does not exist here at the moment among poultry—he says it has been found in the curlew. As a matter of helminthological interest I would like to ask Mr. Taylor if he would consider it probable that although the species of prosthogonimus found in the curlew be the same as that found in the fowl, it would require a strain habituated to the fowl to infect the fowl and hence transmission from the curlew is rendered less likely from: (1) the life habits of the curlew as opposed to those of fowls; (2) the fact that a strain capable of infecting fowls has not been established in Great Britain. Finally, can we diagnose this condition of trematode infestation during the life of the host bird and if so, how?

For his third example, Mr. Taylor selects infestation by *Ascaridia lineata*—he appears to regard its pathogenicity as doubtful, but draws attention to some recent work done abroad. Kaupp in his new edition of "Poultry Diseases" is more emphatic. After describing a complicated life cycle which includes a migration through certain of the internal organs, including the lungs, he says: "Fatal pneumonia may develop" (Kaupp, loc. cit. p. 137). I should like to ask Mr. Taylor if, at the moment, British helminthologists consider that the worm in the course of its life cycle does perform these migrations through the internal organs? If it does, then the possibility that a lesion may be produced which may become infected by bacteria cannot be ignored—serious results may follow—the worm in the meantime may have disappeared into the intestines and its connection with a resulting disease may be masked. In the experience of the present writer this worm (*Ascaridia lineata*) is by no means so common as the "pin-worm" of the cæca of fowls (*Heterakis gallinæ*) to which Mr. Taylor refers in the article cited.

Now, finally, with regard to our fourth question, *viz.*: What shall we do:—(1) To prevent the entrance of parasitic worms into the flock?

(2) To limit their spread when they do gain an entrance?

(3) To eliminate them when that appears desirable? Assuming a flock to be free from worm infestation before we introduce a new purchase, can we:—

(1) Quarantine the bird or birds and examine the droppings or other material for worm eggs or parasites and, if found, is it practicable to treat the individual birds in order to reduce infestation, even if we cannot eliminate the worms altogether? Mr. Taylor practically answers this question in the concluding section of his paper.

(2) Limit the spread of worms? Would it be practicable to ascertain what constitutes overcrowding or even crowding of birds from the point of view of parasitic infestation? Given a specified area, how many White Leghorn, or Rhode Island Red, fowls or chickens could be maintained upon it without an existing worm infestation becoming pathological?; of course that would depend on the species of the worm and on other factors—can it be ascertained by experiment?

How long should young birds be kept away from the adult flock to minimise the risk of worm infestation?

Can we find an age-immunity for each of the 90 species? To the third point in our fourth question Mr. Taylor writes in his paper: "Complete eradication of the parasites may, in many instances, be quite out of the question, but eradication of the diseases by preventing the multiplication of the worms beyond physiological numbers should be less difficult to achieve." With that conclusion we are in agreement.

I should like in closing to thank Mr. Taylor for his contribution to avian helminthology.

References.

[1]Taylor, E. L. "Some Significant Points concerning the Parasitic Worms of Fowls and the Causation of Worm Diseases." *Vet. Journ.*, 87, 28

[2]Cameron, T. W. M. (1931). "Helminth Parasites of Poultry." *Vet. Journ.*, 87. 7.

[3]Cram, E. B. (1930). "The Life Histories of some Round Worms Parasitic in Poultry." No. 86. Proceed. Fourth World's Poultry Congress, London.

[4]Kaupp, B. F. (1929). "Poultry Diseases." Baillière, Tindall and Cox, London.

[5]Matheson, D. C. (1927). "Preventible Losses from Poultry Diseases." Proceed. Third World's Poultry Congress, Ottawa, Canada.

**Mr. H. G. Lamont** (Belfast) spoke of the more than ordinary interest with which he had read Mr. Taylor's paper. On taking a hurried first glance through the paper, just to see what Mr. Taylor was going to write about, his initial impression was "here is a man who thinks worms are not a serious factor in poultry"; then, on more careful reading, he realised that the essayist was fully aware of the fact that worms were a serious menace to the poultry industry. He (the speaker) believed that the parasitic diseases of poultry were just as important in England and Wales as they were in Northern Ireland.

There was one part of the paper which he would like to read to them. Mr. Taylor said: "Reasons given in the early part of this paper appear to justify the conclusion that the natural relationship between a bird and its specific parasitic helminths is not pathological; and that the most notable factor in the etiology of worm diseases is an upsetting of this normal relationship through the introduction of unnatural conditions." As a profession, were they to assume that parasitic helminths were natural in poultry and that they were normal inhabitants of the intestine of the bird? If they were, one might as well maintain that that assumption applied to man and to the lower animals. He (Mr. Lamont) held that worms were not normal inhabitants, because one might as well say that because some people had tuberculous glands without apparent ill-effects these were normal to such persons.

There were many parasitic worms, but he was hoping that Mr. Taylor would make some reference to a worm found in Northern Ireland: a duodenal worm (a Trichosome) which was common in Northern Ireland and, he was sure, in England, and which, he was confident, was the cause of a great deal of trouble in poultry. On *post-mortem* they found immense numbers of these Trichosome worms in fowls which had been going off colour or doing badly for some time with a number of deaths occurring in the flock. In these cases, although careful bacteriological examination and even animal inoculation experiments had been carried out, nothing to account for the lesions had been found and they had been forced to the conclusion that these worms were the cause of the trouble. At the moment they were carrying out investigations on a farm where from 15-20 birds were dying weekly out of a flock of 500, and the only thing they could find were these Trichosome worms.

Another worm with which they were troubled in Northern Ireland, and which he believed could be pathogenic, was the cæcal worm *Heterakis*. Here again, from what Mr. Taylor had said it might be concluded that these parasites were normal inhabitants and were doing no harm: but where were they to draw the line, and how were they to know that these *Heteraki* were doing no harm?

Professor Matheson, in his opening remarks, had dealt fully with the question of what they were to do. They had tried various treatments for worms and he could not truthfully say that as yet they had got any satisfactory treatment for worms in poultry. That drove them back to the question of control, and as the average life of a bird (a laying fowl) was three years it should be an easy thing to control these parasitic infestations; but in practice it was really a very difficult thing. The lines set out by Mr. Taylor were eminently satisfactory, but at the moment he feared that the parasites had got the upper hand and that it was going to be a considerable problem to free farms from worms, as the parasites had got such a hold of the poultry there.

In outbreaks of fowl paralysis they had not yet been able to decide whether the condition was due to a filterable virus, or what part the parasitic worms and oöcysts, which were present in immense numbers, played.

Altogether it was a tremendous problem, and he wished to congratulate Mr. Taylor on the masterly way in which he had introduced it, and also upon his courage in tackling it. (Applause.)

**Mr. K. D. Downham** (Harper Adams College), desired first of all to say how much he appreciated Mr. Taylor's paper. During the last month, since he had been Veterinary Adviser at the Harper Adams Agricultural College, he had met with a great deal of disease in poultry, and he considered that in 50 per cent. of the poultry *post-mortems* he had made, worms of some kind had been found. He thought that specialisation in veterinary parasitology was very essential.

Speaking of concentrating one's attention to one particular line of work reminded him of a story he had heard concerning a recently qualified medical man who was congratulated by his medicine professor upon having passed his final examination. The Professor asked his former student what branch of medicine he intended to take up. The young doctor replied that he intended to specialise in the diseases of the nostril. The Professor remarked "Ah! a very fascinating study; may I ask which nostril? (Laughter.)

He (Mr. Downham) thought that in regard to the investigations on parasitic diseases of poultry they had almost

to go to the same degree of specialisation as the subject in this story. For example, most useful work could be done in the study of coccidia by veterinary specialists in a position to take it up at the laboratory of the Ministry of Agriculture or other suitable Institute.

Coccidiosis was more associated with parasitology than with any other branch of science and he would like to see more specialisation upon this subject.

Recently he had conducted a great many *post-mortems* on birds that had been brought to him by poultry keepers who had suffered heavy losses, and the only lesions he had been able to find had been ulcers in the cæca, with worms adherent to those ulcers.

He wished to ask Mr. Taylor if he associated blindness in poultry with a nematode infestation? In blindness outbreaks he had found a very heavy infestation with the cæcum worm and sometimes the larger Ascarids of the small intestine. Like Mr. Lamont, he should like Mr. Taylor to give them his opinion of the association of parasites, or worms, in connection with fowl paralysis. In the first few outbreaks of fowl paralysis that he investigated he found in every affected bird numbers of cæcal worms to be present.

With regard to overcrowding, he thought definitely that some form of recommendation would be of great value to the poultry industry at present, as to the numbers of birds that should be kept together. It had been the fashion recently to have large poultry houses in which great numbers of birds were raised, and the amount of infection on the land, from the point of view of parasites, must be very heavy. In that connection he wished to ask Mr. Taylor what treatment he would recommend for the land, and, if he advised the use of a disinfectant, to what depth in the soil they should go. He had been exceedingly interested in Mr. Taylor's paper, and he thanked him for his valuable remarks.

**The Chairman** (Professor J. F. Craig, Dublin) observed that most of them came there to get some information on the bearing of worms upon the production of disease and that might have accounted for the shortness of the discussion. Even in Mr. Taylor's paper there was evidence that further information in that direction was required particularly with regard to alimentary parasites. Our knowledge of the effects of these parasites, of their control and treatment had not advanced at anything like the same rate as our knowledge regarding the identification of species and their life histories.

In the earlier writings, owing to the lack of precision in investigation and lack of knowledge, it was not uncommon for losses and illness among poultry to be ascribed to various alimentary worm parasites. But one had always to keep in mind that worm parasites were extremely common in these animals and it was therefore very necessary to negative all other causes before concluding that worms were responsible for the affection. One had an idea of what symptoms might be ascribed to alimentary parasites in poultry by analogy with what occurred in other animals and that could be taken into account when forming an opinion. Moreover, when losses were inquired into generally a dead bird was forwarded for examination and its condition and any changes found in the alimentary canal could be identified and associated or otherwise with the presence of worms.

Mr. Taylor was extremely critical in this respect and wished to go further and insisted that it would be necessary to show that the same symptoms and changes would be set up by artificial infection. That would be an ideal method of testing, but it could not readily be arranged save by extensive investigation in view of the large numbers of species of alimentary helminths that were present in poultry. It would be valuable in cases, *e.g.*, where paralysis was ascribed to cæcal worms.

It was possible, of course, that in some cases, as in blackhead in turkeys, although the worms were not directly responsible for the disease they might, like the *Heterakis*, play a very important part in its production. Eradication of worms in these cases would provide very valuable evidence as to their importance. He was convinced that such worms as Trichomes or Capillaria often caused serious trouble in young birds.

Control and treatment were, from the point of view of the clinician and owner, of course, of the greatest importance. Many anthelmintics were recommended, but their exact value had yet to be ascertained. The owner wanted a form of treatment which could be conveniently given in the food. Hence tobacco and nicotine had come into popularity. Individual treatment in large flocks was not easy to arrange or to carry out. Treatment for the expulsion of worms had a distinct bearing on control and with it the problem of the destruction of eggs and larvæ outside the body, on the ground and in the droppings, required attention. It was not difficult to dispose effectively of infective material on the floors of houses, but in the runs one had to fall back on agents which were used against the worms in other animals, *e.g.*, quicklime, and pay attention to the drainage.

In connection with infestation of poultry in houses he had observed no evidence of alimentary worms in young birds kept on wire under the intensive system. He would like also to mention problems that occur in connection with the control of worm parasites in aquatic birds. He had recently come across losses among two flocks of goslings due to the gizzard worm *Amidostomum nodulosum*. The water was liable to be contaminated and naturally the destruction of eggs or larvæ in the water was almost out of the question.

In another series of losses among ducks the trouble was caused by a species of round worms belonging to the Acanthocephala, *Polymorphus boschardis*. Here these little worms had imbedded their probosces in the bowel wall and little nodules indicating their presence could be seen on the peritoneal surface of the bowel. The intermediate stage of these worms was carried by the small fresh water crustacea. What could be done to get rid of these small shrimps in the water and in that way prevent the further development of these worms? Those were some of the features of control of alimentary worm parasites in poultry.

In the paper which was presented by Mr. Taylor, it appeared to him that two of the most interesting points brought out were (1) that there are different strains of *Syngamus trachea* just as there are strains of the *Ascaris-lumbricoides* and (2) that in some cases only, does age immunity develop in connection with the former worms.

With those remarks, he would call on Mr. Taylor to reply to the discussion.

### The Reply.

**Mr. E. L. Taylor,** in reply, said that it was a far cry from the subject of sterility in thoroughbred mares (discussed at the previous session) to worms in chickens, and in a certain way there might be a touch of humour about it; but times were changed, and when it came to a matter of economic importance there was no comparison between sterility in brood mares and disease in poultry—at least, in this country. Poultry was the coming thing, and disease was its controlling factor; the only thing which prevented it from being a really paying proposition. The veterinary surgeon was concerned with disease, he ought to be able to advise on its control in poultry, and if he could only do this successfully there was no doubt that he should be able to make a good thing out of it and increase his usefulness to the community.

Mr. Lamont had said that in first glancing through the paper he got the idea that he (Mr. Taylor) thought that worms were not of any great importance to poultry, but thought afterwards that that was not altogether his meaning. There was no doubt that worms were not a very serious cause of mortality amongst poultry, but success for the poultry keeper largely depended upon the production of eggs and the hen, in order to produce eggs, must be in the pink of condition, so that any disease, even one which only slightly lowered the condition of the laying hens, would be reducing egg production and perhaps even cutting it off altogether--and it might make all the difference between a profit and a loss. So that in this way, because of their prevalence, worms were of very great importance to every department of poultry husbandry and hence to the veterinary surgeon.

In reply to the various points which had been raised by different speakers, he would like first of all to refer to the remarks made by the Chairman. Professor Craig had said that he considered that to make a definite determination, by lengthy and costly experiments, of which worms were responsible for disease and which were not, would not be within the realm of "practical politics." With that dictum he most emphatically did not agree. Disease must be tracked down in every species, just as it had to be with the various species of pathogenic bacteria. Every organism before it could be regarded as a pathogen must experimentally produce disease before they had any exact knowledge of it. Perhaps the analogy was not very evident in connection with those bacteria which invaded the tissues of the body, but it would be so in connection with those organisms found in the intestinal tract. He had said that the worms were, in a way, normal inhabitants of the intestinal tract, in the same way that many bacteria were normal inhabitants of the intestinal tract. He thought that was quite clear.

Perhaps one of the most perfectly adapted of the worms found in poultry was the cæcum worm, *Heterakis gallinæ*, which one might find in anything from 50-100 per cent. of perfectly normal chickens. Between those worms which were perfectly adapted to the host and those which were so ill adapted that they were unable to exist in any host, was a long series of species, more or less poorly adapted, which brought about reactions in the tissues which the pathologist and the clinician might regard as disease. But he thought it would help their conception of disease production by worms very considerably if they considered them as more or less normal inhabitants, only capable of producing disease when present in exceptionally large numbers.

In connection with this arose the question of overcrowding. Professor Matheson had asked the question: "What is overcrowding?" and how many birds per acre might a poultryman keep without overcrowding? He thought that question hardly arose, since all farming and all husbandry essentially meant overcrowding. We had improved our agricultural methods to such an extent that we were able to keep large numbers of horses, sheep, cattle and poultry on a small area, and we must adapt ourselves to overcrowding by devising some way of controlling the worms in the presence of overcrowding.

Referring again to the experimental determination of the pathogenicity of the various species of worms, he said that there was a tendency to regard worms as one separate thing, capable of producing one disease, a disease called "worms."

That really was just as absurd as to look upon bacteria as one thing producing a disease known as "bacteria."

Professor Matheson had brought up the question of the large number of species. How long should young birds be kept from the flock to be safe from harmful infection? And, again, was there an age immunity from each of the 90 different species which occurred in fowls? Every species was different: there was an age immunity in connection with some—for example, he had mentioned *Ascaris lineata*; with others this age immunity was less obvious or non-existent, as for example, in *Heterakis gallinæ*. The answers to the other questions would also be different for each of the many species of parasitic worm, just as it would be for the different species of bacteria and for the most part but little information was available. In connection with *Ascaridia* another question was asked by Professor Matheson—did it migrate through the lung? He thought that question was settled in the negative; it did not migrate through the lung unless introduced into some unfavourable host.

Professor Matheson had also asked a question in connection with Syngamiasis: did he (Mr. Taylor) consider that the symptoms produced in gapes were entirely due to mechanical blockage of the trachea, or also to toxæmia? He thought there was no doubt whatever that the symptoms were entirely due to mechanical blockage of the trachea. Turkeys might carry hundreds of worms, but yet show no symptoms because the trachea was large enough to allow a sufficient supply of air to pass by.

Concerning prosthogonimiasis, Professor Matheson had asked whether it was not possible for there to be a special strain which affected the curlew and which would not affect the fowl. He thought that would be quite a possibility, but the point could only be settled by experimentation.

The question as to whether worms really caused disease was always cropping up. Mr. Lamont brought it up in connection with several worms: the Trichosome worms and the *Heterakis* in the small intestine and the cæca. He (Mr. Lamont) had even come across cases in which there had been large losses and in which he had been unable to find any other cause of disease. Under those conditions it was quite excusable to make a diagnosis of a harmful verminous infestation, but he thought that Mr. Lamont must admit that he did not *know* that that was

the case. Those worms could not be regarded as proved pathogens until the disease had been reproduced under experimental conditions.

In regard to paralysis, he had had a rather interesting experience which bore on that very point. A large flock of young birds was affected and many were dying; many showed symptoms of anæmia and some were paralysed. All were very heavily infected with the small tapeworm *Davainea proglottina*, and the presence of which worm had previously been associated with paralysis and anæmic conditions by several authors. It therefore appeared quite possible, since the infestation was so extremely heavy on that farm, that paralysis and anæmia were the result. Steps were therefore taken to control those worms; all the fowls were treated with kamala, which had very little effect, but what did have effect was the thorough treating of the ground with $CuSO_4$ and lime. The following year it was interesting to note that fowls running over this ground were perfectly free from the tapeworm. Unfortunately, however, the paralysis and other symptoms recommenced, so that they had to rule out worms as the cause of the condition.

The ulcers in the cæca, mentioned by Mr. Downham, had been associated by various writers with *Heterakis gallinæ* and by some also with coccidia; but, again, he thought they must not speak with any certainty until they had carried out control experiments.

He thought that covered almost everything that had been brought up, and he thanked them very much for the kind way in which they had received the paper. He thought, however, that veterinary practitioners as a whole ought to be more interested in parasitic worms in poultry, and in poultry diseases in general, than they were in most parts of the country at the present time. Poultry farming was certainly the coming thing, and if the veterinary surgeon could get in and show the poultryman that he knew something about it and was able to give good advice, he would be seizing a splendid opportunity which ought not to be missed. (Applause.)

The **Chairman** said that he should like to propose from the chair that a very hearty vote of thanks be accorded Mr. Taylor for his very valuable and interesting contributions both in the form of the paper and in that of the illuminating reply which he had made to the discussion.

The vote of thanks was carried with enthusiasm.

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A novel method of preventing malaria has been suggested by Professor Zieman, of Berlin, who has published a list of 80 plants containing the vegetable oil, coumarin, and has invited residents in malarial districts to sow about their residences those varieties which will be best suited by the climate and which will flower during the worst season of infection. The point is that there is reason to believe that when the female mosquito sucks juice from these coumarin-containing plants she is either cured of her infection or else the parasites are rendered sterile. This belief is supported by the fact that malaria has sometimes disappeared from a district when such plants have been cultivated, as in certain parts of Holland when clover was first introduced, in the Argentine when lucerne was sown, and in most of Egypt where wild clover grows, as compared with the Suez Canal zone where clover is absent and malaria prevalent. If residents in malarial zones respond to Professor Zieman's request, some useful information may be gained.—*Journ. Inst. Hyg.*

# Clinical Report.

## A Brief Report upon the use of Spleen Extract for "Grease."

BY

**G. S. Muir, B.V.Sc., Wellesley, Ontario.**

While this summary deals with two cases only, the results have been so remarkable that they seem to be worth reporting.

The spleen extract used is made from hog or calf spleens, minced, and allowed to stand for 24 hours at room temperature, in a normal saline solution, then strained through cloth or gauze and preserved with phenol or formalin.

The dose was increased from 5 c.c. at the beginning, to as much as 40 c.c. in one case, given intramuscularly. There appeared to be some relation between the reaction following the injection and the improvement of the lesions. No other treatment whatever was used during the time the injections were being made.

Case No. 1. *Subject.*—Clydesdale mare, five years old, in good condition. Both hind legs were affected badly, with large granulomatous masses extending from the coronet and involving the inside aspect of the pastern and fetlock and up to a point on the posterior surface of the leg more than half way to the hock. The whole mass was wet and stinking, and the legs were very much thickened and swollen, especially after standing overnight.

Injections were given every other day and from the first a remarkable improvement was noticeable: the lesions dried up and receded, the smell ceased, and the thickening of the legs overnight disappeared. After several weeks the improvement became slower, and in spite of increased dosage further improvement was very slow until treatment was discontinued after three months. Improvement never quite ceased, however, and the mare's legs were very much better, the area above the fetlock being quite dry and almost normal; the lesion remained at the coronet and up to the fetlock, but here also it was much smaller than formerly and only slightly moist.

Case No. 2. *Subject.*—Clydesdale mare, six years old, in good condition. All four legs were affected, with wet greasy patches just above the fetlocks on both sides of the leg, and on the hind legs just above the heels and up the back of the legs half way to the hocks, which had resisted various treatments for two years. The legs were very itchy and the mare was continually rubbing them and stamping.

Injections were given every other day, beginning with 5 c.c., increasing until 15 c.c. daily was being given. After the first day the lesions were dry and the itching had ceased, and after a fortnight of treatment the legs appeared to be healed, except for a little moisture above the heels on the hind legs, and treatment was discontinued.

Sufficient time has not yet elapsed to be able to judge whether this improvement will be maintained, but this treatment seems to be worthy of trial, and further experimentation may determine its value, either alone, or as an adjunct to local treatment. I shall be glad to give further information from my notes on these cases to anyone who is interested, and who will write to me, c/o the *Veterinary Record*.

# Abstract.

[**Paracentesis in the Horse.** Doenecke, Dr. H. *D.T.W.* No. 12. March 21st, 1931. pp. 183-185.]

Paracentesis is useful as a diagnostic help in cases of colic.

A strangulated portion of bowel causes discoloration of the clear yellow peritoneal fluid through blood extravasation.

In the case of a volvulus of older standing the fluid is coloured light to dark red and may possibly take on a yellowish grey colour owing to phagocytosis. Large numbers of leucocytes appear in peritonitis. In rupture of the stomach the fluid has a sour odour and in rupture of the bowel there is a smell of stale fæces as well as discoloration with fæces.

Paracentesis is carried out, after disinfection of the site on the linea alba between the umbilicus and xiphoid cartilage, with a hollow needle or a specially designed trocar and cannula and the fluid is caught in a test tube.

Unpleasant sequels very rarely follow the use of a special apparatus constructed as follows:—

The cannula is open pointed and has two lateral openings near the point. Near its other end the external diameter is increased so as to make it self-retaining. The trocar is longer than the cannula and is blunt pointed, and at the other end has a chain and a ring which is slipped over the little finger of the right hand in order to secure it. In use, the trocar is slightly withdrawn, the cannula is inserted through the skin and linea alba; the trocar is then pushed home and the cannula entered until it becomes fixed in position. The trocar is withdrawn and, if necessary, the cannula slowly withdrawn till the fluid appears.

H. H.

# Colonial Services Reports.

## New South Wales Department of Agriculture.

### Livestock Diseases Report (No. 6) for year ending June 30th, 1930.

Live Stock.

The area of Australia is so great that many people will be surprised to read that in this State, one of five, the livestock statistics show the numbers of animals are:—

| | |
|---|---|
| Horses ... ... ... | 567,371 |
| Cattle ... ... ... ... | 2,784,646 |
| Sheep ... ... ... | 50,184,950 |
| Pigs ... ... ... ... | 311,695 |
| Total ... ... | 53,848,662 |

This interesting report of Lieut.-Colonel Max Henry, B.V.S.C., M.R.C.V.S., states "The outstanding features of the year from a disease point of view have been the initiation of a campaign against wound infections of sheep (caseous lymphadenitis) and the diseases of poultry." As in England, the lack of finances has prevented the full exploitation of many activities of the Research Department which, under the direction of Dr. Seddon, is being increased by the addition of more laboratory accommodation and a house built for the Senior Assistant.

The Stock Branch is now comfortably housed in new quarters in Raphael Street, Sydney.

Disease.

*Poultry Diseases.*—Four diseases have received special attention, *viz.*, coccidiosis, bacillary white diarrhœa, umbilical infections and intestinal worms.

The opinion is expressed that "coccidiosis is a more serious disease, so far as monetary loss is concerned, than 'B.W.D.' and that many disinfectants recommended for the control of this infection are useless, yet coccidiosis can easily be controlled by hygiene and the necessary precautions." With regard to "B.W.D.," elimination of reactors and incubator fumigation are recommended.

Intestinal worm infestation increases, and it has been found that "best results for eradication are obtained by hygienic measures rather than by the use of drugs." The introduction and rapidly growing popularity of "battery brooders" is very pleasing from a disease-controlling aspect.

*Tick Eradication.*—Excellent work has been done in the control and eradication of this disease. The work would be more easily accomplished if stock owners adopted a better attitude to it. The winter was very severe and it was hoped that this would materially assist in the work but it proved to be no more detriment to tick life than an average winter.

*Caseous Lymphadenitis.*—Recommendations have been issued to sheepowners as to cleanliness in all operations associated with shearing, marking, castration, etc., also as to the culling of all sheep showing discharging abscesses.

*Tuberculosis.*—The number of cattle destroyed on account of tuberculosis was 901.

Cattle numbering 5,032 were tested, of which 87, or 1·73 per cent. reacted. Those tested *for the first time* numbered 2,066, of which 70, or 3·39 per cent., reacted. No mention is made as to tuberculosis in pigs or poultry.

*Pleuro-pneumonia.*—Good work has been done regarding this disease. In one outbreak it appears the source of infection was due to a "carrier," this was confirmed by *post-mortem* examination. For the first time in this State the biologic test was employed and the success obtained warrants further work.

*Anthrax.*—Eighteen outbreaks occurred. It is considered that grass seeds which have hard sharp points may have something to do with those outbreaks.

*Blackleg.*—Sixty-three outbreaks occurred. The most interesting feature in connection with this disease is *the number of sheep affected.* Vaccines have been used but in some instances unsuccessfully; this failure is attributed to non-potency of the vaccine used.

*Actinomycosis and Tumours.*—Four hundred and thirty-five animals were found affected with actinomycosis and 125 with cancer. Four hundred and ninety animals suspected of various diseases were sent to the Flemington saleyards.

*Black Disease in Sheep.*—This disease, associated with fluke infestation, is best controlled by treating water courses, swamps, etc., with copper sulphate and the sheep with carbon tetrachloride.

*Lice and Ked Infestation.*—Throughout the year no sheep found to be infested were allowed to be sold in the saleyards. This has had the effect of forcing owners to dip their sheep—306 quarantines were imposed for those infestations.

*Blow Fly.*—This is a serious trouble in Australia. The work of the field officers consisted chiefly in advising stock-owners as to the best methods of treating fly struck sheep and having carcasses destroyed so as not to form breeding grounds for the flies.

*Internal Parasites of Sheep.*—The use of copper sulphate and mustard drenches is preferred to carbon tetrachloride, being much safer and equally effective, but it is added that for fluke infestation the latter drug is without a rival.

*Contagious Mammitis.*—The opinion is expressed that the use of suitable vaccine appears to be of unquestionable benefit in minimising the spread and modifying the severity of the disease.

*Contagious Abortion.*—The difficulties associated with the eradication of this disease are well known in closely settled countries; they are greater still in large areas, *e.g.*, New South Wales. The elaboration of a practicable field test would, it is stated, assist and is looked for. Farmers depend too much on departmental action: much good could be done if they would avoid buying cows in saleyards, isolate newly-purchased animals, control bulls, wash out and isolate aborting cows and seek veterinary advice before herds become grossly infected.

*Various Diseases.*—Various other diseases have been under consideration, *e.g.*, sterility in cattle, mineral deficiency and osteomalacia, scour in calves, lung form in calves, ophthalmia, scabby mouth, mycotic dermatitis, trefoil dermatitis, yellow big head in sheep, nasal catarrh in sheep, balanitis, botulism, lice on horses and poultry, Spirochætosis of poultry, venereal disease in cattle, plant poisoning.

Dietetic Conditions.

One of the most interesting lines of activity of the Department is concerned with mortality from dietetic causes, *e.g.*, toxæmia of pregnancy in ewes and plethoric toxæmia.

Compensation.

Though it is stated in one part of the report that no outbreaks of swine fever occurred during the year, it is stated that the sum of £22,221 was paid as compensation for this disease. Twenty thousand pounds compensation was paid for 5,536 pig carcasses condemned after slaughtering.

The Report is an excellent one and is typical of the most progressive Veterinary State Department in Australia.

T. D. Y.

## Fiji.

[**Annual Report of the Senior Veterinary Officer for the Year 1930.** Published by the Department of Agriculture, Fiji.]

Staff.—The Senior Veterinary Officer, Mr. C. R. Turbet, B.V.Sc. (Syd.), is assisted by Mr. H. M. Stuchbery, B.V.Sc. (Melb.) as Veterinary Officer, one Stock Inspector and four native assistants.

Disease.—Bovine tuberculosis is enzootic and is controlled only by rigorous inspection. Regulations allow of eradication from dairies supplying milk, and 255 animals were tested with tuberculin, with 31 reactors. Occurrence in pigs fed on skim milk from butter factories is noted.

Parasitic infestation of all animals is frequent, and a list of internal parasites collected by the writer during the past eight years is furnished. *Stephanurus dentatus* of the pig is common, but can be controlled by the application of sanitary laws and daily flushing of the sties.

Fowl-pox, entero-hepatitis of turkeys and fowl typhoid are recorded. A locally-prepared vaccine against the first-named has recently been experimented with.

During the year *Hæmaphysalis bispinosa* was discovered on cattle in a certain area. This tick was formerly unknown in Fiji and a campaign of eradication was initiated. Spraying and handpicking were resorted to, and dogs and mongoose were poisoned. It is believed that measures will be successfully completed by the end of 1931. Although *Rh. sanguineus* occurs on dogs, Fiji up to this time has been free of all tick on cattle.

Three cases in cattle of poisoning by *Lantana* were reported. The *Agricultural Journal* of Fiji, 1931, Vol. 4, No. 1, contains an article on this plant and its toxicity by Mr. Turbet. It is characterised by skin irritation, dermatitis, especially of the non-pigmented areas and where it is thin. The muzzle is covered with a brownish exudate, and there is lacrymal, nasal and salivary discharge. Death occurs in 12 to 20 days in about 70 per cent. of the cases. For the destruction of the *Lantana* plant, an insect (*Teleonemia* sp.) has been introduced, and the results are encouraging.

Genetics.—With the assistance of Government a considerable number of pure-bred animals were introduced from Australia and New Zealand: the importation included cattle, sheep, pigs and poultry.

The application of the Stock Improvement Ordinance is manifesting benefit. During the year 103 bulls and 12 stallions were licensed and 582 bulls and 111 stallions were ordered to be castrated.

Industries.—Dairying is now an established industry in Fiji, 440,000 lb. being manufactured during the year. As this Colony imports over 300,000 lb. of ghee for Indian consumption there is room for expansion. One hundred thousand pounds of butter were exported. Milk is retailed at 4d. per pint.

A meat canning factory has closed down owing to the surplus of fresh beef for local consumption and the quantity being insufficient to establish an export trade.

More interest is being taken in pigs. Poultry are doing well. Horses are being more used in cultivation than formerly.

## Jamaica.

[**Report of the Government Veterinary Surgeon, S. Lockett, V.M.D.**: included in the Annual Report of the Department of Agriculture.]

Government Stock Farm.

The author is lecturer to agricultural students at the Government Farm School, and includes in his curriculum for the second year (iii) vaccines and their values in the control of diseases; (iv) the application and use of tuberculin in tuberculosis control; (vi) and (viii) the causes and treatment of sterility, pneumonia, diarrhœa and intestinal worms. In the third year the subject headings are of an even more advanced character.

*Tuberculosis* among cattle on the Government Stock Farm now appears to be eradicated. Intradermal testing of poultry has revealed 13 cases.

*Piroplasmosis.*—Owing to the situation of the Farm, undipped cattle sometimes stray and despite fortnightly dipping occasional cases of redwater occur.

Contagious Diseases of Animals Law.

There has been no foot-and-mouth disease since 1926. Suspected cases of anthrax may be either blackquarter, or plant poisoning. Swine fever was suspected. There are 341 dipping tanks in Jamaica.

# Indian Veterinary Service Report.

## Bihar and Orissa.

### Report for the Year 1929-30.

Census.—Cattle, 27,907,548.

Staff.—In the absence of Mr. D. Quinlan, Major P. B. Riley, I.V.S., was officiating Director and Veterinary Adviser to the State Government. The Report is presented by Mr. J. S. Garewal, I.V.S.

The total subordinate staff of Veterinary Inspectors and Veterinary Assistant Surgeons is 160. Thirty-six students are in training at the Bengal Veterinary College pending the opening of the nearly completed college at Patna.

Disease.—Of the different contagious stock diseases, 6,660 outbreaks were recorded and 35,543 deaths. Rinderpest and hæmorrhagic septicæmia are the most important, the former with 3,054 outbreaks and 27,212 deaths, and the latter 1,701 and 7,077. Foot-and-mouth disease, anthrax and blackquarter are recorded. Deaths from rabies numbered 68 in dogs and 14 in cattle.

Inoculations of serum alone to the number of 164,641 were performed against rinderpest, and in addition, 236 were successfully inoculated by the serum simultaneous method. Vaccinations numbering 128,141 were carried out against hæmorrhagic septicæmia. Six thousand eight hundred and eighty-three animals received anti-anthrax serum, and 22,500 were vaccinated against blackquarter. A sum of £15,000 was spent on the purchase of the various sera and vaccines.

The number of specimens examined at the Laboratory was 6,275.

Genetics.—The Department is in charge of the Cattle Breeding and Dairy Farm, and maintains 65 breeding bulls at its different Veterinary Hospitals. Scrub bulls were castrated to the number of 71,927.

The Tharparkar and the Desi breeds are being maintained.

Expenditure.—The total expenditure during the year was £53,800.

An attraction at the Stokesley Show on September 17th was the exhibition of the pure-bred South Durham ox, the Plymouth Giant, which is claimed to be the world's biggest ox. The Plymouth Giant is now nearly six years old, and stands 17·1 hands. It turns the scale at 33 cwts., which is several cwts. heavier than the great bullock of the Shorthorn type, Pat the Giant, which created interest in the North of England some years ago.

# N.V.M.A. Divisional Report.

## South-Eastern Division.

### N.V.M.A. President on the 1932 Congress.

Special Meeting at Maidstone.

An important Special Meeting of the South-Eastern Division, N.V.M.A., was held at the Star Hotel, Maidstone, on the afternoon of Thursday, September 24th, 1931. Two sessions were introduced, at the first of which Lieut.-Colonel P. J. Simpson (President, N.V.M.A.), outlined his views in regard to the arrangements for the Annual Congress of the National Veterinary Medical Association to be held at Folkestone next year, and at which 24 members of the Division were nominated to serve with the members of Council, N.V.M.A., as a Provisional Committee for the Congress. The succeeding session was open to all veterinary surgeons practising in the area of the Division and was devoted to a discussion on the centralised and decentralised schemes put forward by the R.C.V.S. and the N.V.M.A. in connection with the treatment of sick animals of poor persons. Mr. G. P. Male (President, R.C.V.S.) attended and spoke of the schemes, and it is regrettable that so few veterinarian non-members of the Division availed themselves of the invitation extended to them to hear their President's explanation of the nature of and necessity for these complementary plans and to share in the subsequent discussion, which took place in committee, and following which a resolution in favour of the adoption of the Decentralised Scheme was passed.

The President of the Division (Mr. Hugh P. Hogben) occupied the chair and there were also present Mr. E. P. Barrett, Mr. J. K. Bateman, Major J. Bell, Captain G. W. Bloxsome, Mr. J. G. Cattell, Captain F. Crowhurst, Mr. J. B. Dier, Major G. W. Dunkin, Messrs. E. Ebbetts, H. Gooch, S. F. J. Hodgman, A. D. McEwen, Captain F. Marks, Messrs. F. Morgan, J. W. Pritchard, C. Roberts, A Spicer, and Major T. Dalling (Hon. Secretary), together with the following visitors: Mr. G. P. Male (President, R.C.V.S.), Lieut.-Colonel P. J. Simpson (President, N.V.M.A.), Mr. J. G. Crowhurst, Mr. Hughes and Captain Wemys Morton.

The Secretary announced the receipt of apologies for absence from Mr. C. Crowhurst, Captain F. C. Gillard, Captain W. D. Halfhead, Principal F. T. G. Hobday, Major L. P. Pugh and Mr. H. Taylor (members), and from Captain G. O. Ogden, of Eastbourne.

### N.V.M.A. Congress, Folkestone, 1932.

The Chairman: I think you all know the reason for the holding of this meeting; it is a Special Meeting, and I think for the members of the South-Eastern Division it is a very special meeting when we have to discuss such an important matter as the making of arrangements for the Annual Congress of the "National."

In this regard we had two very eloquent advocates in Major Dunkin and Major Dalling, and so we are going to be honoured by the holding of the Congress at

Folkestone. At the moment we do not know very much about the work involved, and the President of the "National," Colonel Simpson, has very kindly come here to enlighten us: I have much pleasure in asking him to be so good as to give us his ideas on the subject.

Lieut.-Colonel P. J. Simpson (President, N.V.M.A.): I had hoped that perhaps you, Mr. President, would have explained to the meeting that (if I may say so) your first business was to nominate 24 of your members to serve on the Provisional Committee, because until that has been done and your representatives have been elected by Council, N.V.M.A., to serve with them as the Provisional Committee for the 1932 Congress, you are not in a position to make any definite arrangements. When once that is done, however, you will be responsible by articles of association of the Association, for all the necessary arrangements for the Congress. Anything I have to say on this matter this afternoon, therefore, is merely of the nature of a few suggestions that have occurred to me following upon my experience of occupying the Chair last month at Norwich, and the suggestions I shall make are purely to be taken as my individual opinion. Should the Committee decide differently from my suggestions, I assure you that I will stand by your decisions and support you as loyally as is possible. To-day, however, I fear we shall be unable to decide definitely upon anything at all, but perhaps members will be kind enough to bear in mind what I have to say, and, when subsequently you meet together for executive action, the Provisional Committee can decide on a programme that they think most suitable.

In the first place, it is left to the Provisional Committee to fix the date of the Congress, and in fixing the date I should like attention paid to the day of the week upon which the opening day falls. We have had three experiences—at Newcastle, at Ayr and at Norwich—of beginning the Congress at the week-end, *i.e.*, on a Saturday, and I do not think that in any of those instances can this procedure be claimed as successful. People would rather stop at home and finish out the week's work before starting for Congress. At Norwich the first part of the Annual General Meeting was held on the Saturday, and the attendance was deplorable. Some portion of the business at the Association's Annual General Meeting is merely formal, it is true, but much of it is very important, and many decisions of moment are often taken. If the meeting is held on the Saturday you are often met with the irate question: "Why did you do this?" from people who could not get to Congress so early. You tell them to wait until the Adjourned Annual Meeting (the Closing Meeting of Congress) and they say they must be off before then. Accordingly, I should like that meeting held in the middle of the Congress, and carried through in one day.

To revert to the day and date at which you are going to fix that Congress should commence, I think that a place like Folkestone differs rather from Newcastle and Norwich, inasmuch as Folkestone is not a cathedral city; moreover, the N.V.M.A. have not had a civic invitation from Folkestone, but in both those other cases a civic invitation was sent and coupled therewith was an invitation to attend Service at the Cathedral. In those cases it was right that we should attend the Cathedral Service, but it occurs to me whether it might not be better in the case of Folkestone to start the Congress on the Monday and end it on the Friday. That is just a personal suggestion, as nearly all these suggestions are.

Having fixed that, there is, of course, the question of programme—as regards the papers. I should like to see (and I think it was rather the general opinion at Norwich) the formation of the Congress into sections; and here, again, I would suggest a matter of three sections—a Clinical Section, a Section of Pathology (or Experimental Pathology), and a Section of Public Health as affecting the veterinary profession. I emphasise the Public Health Section, because at Norwich, for the first time, we invited local authorities to send their veterinary officers as delegates, and I think that a number amounting to well over thirty sent their veterinary officers as official delegates to Congress. Many of the County, Borough and Town Councils also wanted to send another delegate—the Chairman of their Health Committee, or whoever it might be, but under the existing rule that was prohibited, unfortunately (as I think) at Norwich. I thought that was a short-sighted policy, and at a recent meeting of the General Purposes Committee, held in Town, this matter was brought up by order of the Council and the Committee agreed to recommend to Council that local authorities should allow other delegates, in addition to their veterinary officer, to attend the Congress. I think that is good propaganda work, because it will allow these men to mix amongst us and see what sort of a Congress we put up. That is why I am anxious to have a Public Health Section.

I think that perhaps we might have four or five papers in the Public Health Section, five in the Clinical Section, and three or four in the Pathology Section; these would fill up a very good programme of papers.

If we started on the Monday, we could get through the opening of Congress and of the Trades Exhibition and have two good papers on the morning of that day, to attract people to Congress on the opening day. With the same object, upon whatever day you decide to open Congress, I should like to hold my Presidential Reception on that day. On the Tuesday you would have a matter of three papers in the morning, and the afternoon would be devoted, as usual, to excursions and so on. On Wednesday, again three papers—one in each of the three sections—and in the afternoon the Annual General Meeting might be held, with the Annual Banquet in the evening. By that time we should be in the middle of the Congress and we should have a far better attendance at the Annual Meeting and at the Banquet.

A mistake was made in connection with the Annual Banquet at Norwich, if I may say so without detracting in any way from my sense of appreciation of the work of the Norwich Provisional Committee. The price of the tickets at the Norwich Banquet was fixed so that the members attending the function paid for the official guests of the Association, music, etc. This year I hope that will be altered, because at the N.V.M.A. Finance Committee Meeting on Monday last I got the point carried that official guests asked to the Annual Banquet should be paid for out of the funds of the Association. That means, in effect, that the ticket for the Banquet should be half-a-guinea instead of one guinea, as at Norwich. It would also relieve the Provisional Committee here of trying to make both ends meet over the Banquet.

Then, of course, at Norwich the Eastern Counties Division very kindly held a reception. I want it known (I made it plain at Norwich) that it is absolutely non-essential for any Division in whose area the Association meets to provide any entertainment whatsoever for the "National." That procedure was, in fact, a relic of olden days when the "National" was bound, for financial reasons, to put itself, as it were, on to any local Division. There is no need at all for that nowadays; we are not overburdened with money at headquarters, but we have a little, and we are able to pay the expense of putting up a good Congress without having to call on our members living in the district in which we are holding our meeting, to support us. Of course, that is not to say that we should not accept such support if (as in the case of the Eastern Counties) it was offered, but I want every member of the South-Eastern Division to know that he should not expect to have to do anything in that way at all.

As I have suggested, we might have three papers in the mornings, the afternoons being devoted to pleasurable trips, and so on. On the Wednesday—the day of the Annual General Meeting—I would suggest that a good outing for the ladies be arranged, because, although ladies can come to the Annual Meeting, unfortunately they cannot vote, and they could have their outing when the gentlemen are on Annual Meeting business bent, and could join them at the Banquet in the evening.

Thursday's programme could approximate that of Tuesday. On Friday there could be two papers in the morning, followed by the Closing Meeting, and in the evening a farewell dance or something of that sort. That is roughly the view of things that I wish to bring before you.

Another important matter is the duties of the Local Secretary, whom you will have to appoint. These duties can be very onerous, but personally I do not think it fair to ask a local man to undertake such heavy responsibilities as I know were undertaken at Norwich. I think the burden can be considerably lessened by closer co-operation with headquarters in Town: a great deal of the booking and sending out of tickets can be quite well done from headquarters. If the blue ticket-sheet distributed through the *Record* were returned direct to headquarters that would save the Local Secretary an enormous amount of work.

I do not know that there is very much more at the moment to speak to you about, but I would stress the point that it is up to the Provisional Committee to frame the programme of papers, to be responsible for them and to assure themselves that they are worthy of being read at such an important gathering as the Annual Congress: you must, either as a Provisional Committee, Sub-committee, or as individuals, go through those papers and be thoroughly satisfied with them before they are printed and sent out as papers to be presented at Congress. I hope a very strict eye will be kept on those papers, and I would remind you that the Provisional Committee have the power to decline or postpone any paper which in their opinion is not of a sufficiently high standard.

I thought I would like to take this opportunity of placing at any rate my own views in front of you before you met and started out on the work that lies before you. If there are any questions anyone would like to ask and that I can answer, I shall be pleased to do so.

Replying to the Chairman, Colonel Simpson said that the various Sections he had proposed need not meet simultaneously, but he should like to give as much time as possible to their discussion. At Norwich there was rather a tendency to start the trips too early in the afternoon, and people either had to leave the discussion, gulp their lunch and hurry off, or abandon the trip—both unfortunate alternatives. If they did not start the trips too early they could quite conveniently get the consideration of three papers into a morning: one in each Section.

The Chairman: I understand that we have been a little premature—that we should have nominated our Committee first—but for my own part I have been very glad to hear what the President has had to say before getting on further with the business. We have now to nominate the Committee to serve as the Provisional Committee for the Folkestone Congress, in combination with members of Council, N.V.M.A., who are *ex officio* members of that Committee.

Major Dunkin: It is quite clear that every member present here is an enthusiast and I am accordingly going to propose that all members of the Division here to-day be nominated as members of the Provisional Committee, with the exception of those who are members of Council N.V.M.A., and accordingly are *ex officio* members of the committee.

The proposition was seconded by Mr. Barrett and carried unanimously.

Seven members of the Division's quota of 24 remained to be nominated, and a list drawn up by the President and Secretary was accepted by the meeting, on the proposition of the President, seconded by Mr. Bateman.

The complete list of Councilmen representatives and Divisional nominees was as follows: The President (Mr. Hugh P. Hogben); the Hon. Secretary (Major T. Dalling) and the following other members of Council N.V.M.A., *viz.*, Major G. W. Dunkin, Mr. H. Gooch and Major L. P. Pugh; Mr. E. F. Barrett, Mr. J. K. Bateman, Major J. Bell, Captain G. W. Bloxsome, Major J. G. Cattell, Captain F. Crowhurst, Captain A. T. Crowther, Mr. J. B. Dier, Mr. E. Ebbetts, Captain F. C. Gillard, Captain W. D. Halfhead, Mr. S. F. J. Hodgman, Mr. T. F. Hogben, Mr. A. D. McEwen, Captain F. Marks, Mr. F. Morgan, Captain C. W. Perrin, Messrs. J. W. Pritchard, L. Roberts, A. Spicer, H. Taylor, Captain G. Wacher and Captain A. Whicher.

It was decided to hold the first meeting of the Provisional Committee at Tunbridge Wells, at the same time as the next meeting of the South-Eastern Division (in November).

Lieut.-Colonel Simpson: I shall do my best to attend all meetings of the Provisional Committee. (Hear, hear.)

. . . . .

**Free Professional Treatment for Sick Animals of the Poor.**

Following an interval for tea, the President called upon the Hon Secretary to read a number of documents from the N.V.M.A. relative to the above.

The Chairman expressed the pleasure which it gave the South-Eastern Division to have both the President of the

R.C.V.S. and of the N.V.M.A. with them that afternoon. The latter they had already heard with great advantage, and he was very glad that Mr. Male had also been able to come down to Maidstone to give them some information on the second matter of great importance which the Division had to consider that day.

Mr. G. P. Male, at the request of the Division, acted as a delegate of the National.

In the course of his remarks he enumerated the reasons for at once putting into operation schemes for the free treatment of animals of the poor where they are not now in existence. He gave details of the working of such schemes and advised members in each town or locality to meet together and at once make a start either in co-operation with the R.S.P.C.A., which he advised, or without such assistance.

He said there were no real difficulties if *all* veterinary surgeons co-operated, and he sincerely hoped that within six months there would be no district in the British Isles where there was not some organised scheme whereby sick animals belonging to poor people could have free treatment by qualified veterinary surgeons.

The meeting now resolved itself into committee to discuss this matter.

Following prolonged consideration of the subject, and Mr. Male's reply to points raised in discussion, a return was made to open meeting.

The following resolution, proposed by Captain Bell and seconded by Mr. Hodgman, was carried unanimously:—

> "That this meeting approves the establishment of a decentralised system of treatment for the sick animals of poor persons, and emphasises the necessity, for the successful working of the system, of the full co-operation of all the veterinary surgeons in the districts concerned."

The Chairman: The only thing that remains to be done is to thank Mr. Male for his time and service in coming here to-day. I know he is one of the busiest practitioners in England, and his coming here for this length of time shews the great interest he takes in this question. I think we should all do our best to support him in this work. (Applause.)

The Hon. Secretary: The meeting should not close without an expression of our indebtedness to our Chairman for his hospitality here to-day. (Applause.)

T. Dalling, *Hon. Secretary.*

## Abortion Produced in Cows with Brucella melitensis.

Zanzucchi (Italy) injected four pregnant cows with cultures of *Br. melitensis* of human origin in the jugular veins and all of them aborted between 52 days and 88 days following the dates of the injection. The cows were in the fourth to the sixth months of gestation. All of the cows were chosen from regions where no contagious abortion existed, were checked for their health, and were protected against natural infection from their environment. The organism was recovered from both the cows and their aborted calves. From this experiment, says the author, it seems conclusive that *Br. melitensis* possesses (to a marked degree) the property of causing abortion in cows.

Thus the interlocking relation of undulant fever of man and contagious abortion of cows is gradually being established.—*N. Am. Vet.*

# In Parliament.

The following questions and answers have been recorded in the House of Commons recently:—

### Milk (Bacteriological Standard).

Mr. Potts asked the Minister of Health whether he can introduce legislation enforcing a definite bacteriological standard of milk to be fixed and make it an offence for producers and retailers to sell milk not of the fixed standard?

Mr. Chamberlain: I cannot undertake to introduce any such legislation at the present time.

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### Tuberculosis.

Mr. Shepherd asked the Minister of Health what percentage of the population of England and Wales died of tuberculosis in the years 1911 to 1930, inclusive?

Mr. Chamberlain: As the answer contains a number of figures, I will, with the hon. Member's permission, circulate it in the Official Report.

*Following is the answer:*—

England and Wales.—Number of deaths from tuberculosis (all forms) per cent. of the total population, in each of the years 1911-1930.

| Year. | Rate. |
|---|---|
| 1911 | ·1468 |
| 1912 | ·1372 |
| 1913 | ·1352 |
| 1914 | ·1361 |
| 1915 | ·1515* |
| 1916 | ·1529* |
| 1917 | ·1624* |
| 1918 | ·1694* |
| 1919 | ·1284* |
| 1920 | ·1133* |
| 1921 | ·1126 |
| 1922 | ·1121 |
| 1923 | ·1062 |
| 1924 | ·1058 |
| 1925 | ·1038 |
| 1926 | ·0961 |
| 1927 | ·0972 |
| 1928 | ·0928 |
| 1929 | ·0959 |
| 1930 | ·0898 |

* Based upon civilian deaths and civilian population.

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### Cattle (Tuberculosis).

Mr. Shepherd asked the Minister of Agriculture whether he can state what percentage of cattle in England and Wales has been reported tuberculous; and the number of cattle slaughtered in 1930, or nearest year, because of tuberculosis?

Sir J. Gilmour: The precise figures asked for are not available. The Tuberculosis Order, 1925, makes it obligatory to report cattle suspected of being affected with certain forms of tuberculosis specified in the Order. The following figures relate to action under the provisions of the Order in 1930:—

| | |
|---|---|
| Number of premises in respect of which reports were made | 15,008 |
| Number of cattle on premises which were the subject of reports | 471,827 |
| = 8·1 per cent. of total cattle population (5,849,776 on June 4th, 1931). | |
| Number of cattle examined on premises which were the subject of reports | 177,425 |
| = 3 per cent. of total cattle population. | |
| Number of cattle slaughtered in pursuance of Order | 12,760 |
| = 7·2 per cent. of the number examined. | |
| = 2·7 per cent. of number on premises which were the subject of reports. | |
| = 0·2 per cent. of total cattle population. | |

### Foot-and-Mouth Disease.

Brigadier-General Clifton Brown (on October 5th) asked the Minister of Agriculture the most recent position as regards foot-and-mouth disease; and how many animals were treated with foot-and-mouth disease serum during the recent outbreaks, and with what result?

Sir J. Gilmour: Twenty-three cases of foot-and-mouth disease have been confirmed in Great Britain since August 1st last, of which seven have occurred since September 1st. The most recent outbreak was confirmed yesterday at Graffham, Huntingdonshire. Infected area restrictions are at present in force in three districts, namely, within areas of 15 miles radius of Graffham, Huntingdonshire, and of Walsall, Staffs, and an area covering five miles radius of two infected places in adjacent parishes in Pembrokeshire and Carmarthenshire. Since August 1st last, 375 cattle, 631 sheep, 514 pigs and 1 goat have been treated with foot-and-mouth disease serum. The disease appeared in only one instance among treated stock in this period, namely, on August 30th, when five cattle went down out of a number of animals which had been inoculated with serum 13 days previously.

Sir F. Hall: What has been the actual result of the serum treatment?

Sir J. Gilmour: I think that it is too early to form any definite conclusion.

Captain Gunston: Can the right hon. Gentleman say if the position in regard to foot-and-mouth disease is more favourable than last year?

Sir J. Gilmour: I am afraid I could not say.

Mr. Smithers: Does the Minister still consider that the best way of counteracting this disease is by slaughtering and the burning of the carcasses?

Sir J. Gilmour: Yes, certainly.

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### Light Horse Breeding Grant.

Earl of Dalkeith asked the Financial Secretary to the War Office whether he is aware that an undertaking existed whereby two years' notice was to be given before any withdrawal of the light-horse breeding subsidy; and whether, in view of the serious effect of the total withdrawal of this subsidy on the light-horse breeding industry and the hardship inflicted thereby on the breeders, farmers and organisations concerned, who, on the faith of the undertaking given, have purchased stallions and mares, he will consider making a temporarily reduced grant instead of withdrawing it entirely?

Mr. F. Owen asked the Financial Secretary to the War Office if, in view of the depressed state of British agriculture and the need for fostering all branches of the national industry, he will reconsider the discontinuance of the grant for assisting the War Office light-horse breeding scheme?

Mr. Cooper: The Secretary of State hopes shortly to have the pleasure of discussing the whole question with representatives of the interests concerned.

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The experience of Dr. Algernon Wear, School Medical Officer, Leeds, in regard to the provision of extra milk for children bears out that of other medical officers. He finds that at each year of age, from 5 to 12 years, the milk takers are heavier than the non-milk takers, the advantage being a substantial one, varying up to 4·6 lb. Dr. Wear points out that the milk takers include a large proportion of originally delicate children, which makes the subsequent difference in weight between them and the presumably healthy non-milk takers all the more striking.

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Klimmer reports from a search of the literature that 35 cases of avian tuberculosis in man have been recorded since 1893.

### Horses on Farm and Road.

"It is doubtful whether the generality of farmers have fully considered the question of the economical use of horses," says the National Horse Association of Great Britain, in a recent publication. "This view is strengthened by a perusal of a most valuable report to hand, No. 168, published by the University of Leeds and the Yorkshire Council for Agricultural Education. The report deals with production costs, sources of supply, and methods of disposal of agricultural products—eight years' Yorkshire records, 1921-29.

Cost of Horse Labour.

"In any well kept farm accounts, due record has to be made of costs of horse labour—but how are such costs determined? On most farms the figures would be difficult to substantiate. It is on this matter that the report provides some sound guidance and information and reflects great credit on the compilers. It is stated that 'The horses have to be fed, their food may either be produced on the farm or purchased; if produced on the farm its cost of production is determined by the rent and rates, the monetary outlay on seed and fertilisers, and the cost of upkeep of the implements, and labour employed in working the land. If the food is purchased the cost of horse labour is influenced by that direct cost. Every item of cost of any individual farm product may be traced back finally to those general production costs of the farm as a whole.'

Variations in Cost of Upkeep per Working Horse.

"It has been ascertained by careful investigation that the cost during the eight years 1921-29 was £33 17s. 9d. per working horse per year. The cost in 1914 was roughly £30 per head per year—so that in spite of all fluctuations the cost at the end of 1929 was shown to be only 13 per cent. above the pre-war level. But this is not all the story. The number of working days per year has fallen considerably from 213 in 1919-20 to 152·5 in 1928-29. The cost per working day has varied from 7s. 3d. in 1920-21 to 3s. 8d. in 1926-27—the eight years' average being 4s. 8d. When one considers that such items as grazing, soiling crops, hay, straw, roots, home-grown concentrates, purchased concentrates, incidentals, and labour all have to be taken into account, as well as the number of days actually reckoned as working, it can be seen that it is not a matter for surprise that the estimates of horse labour costs vary so widely in different districts.

Facts from Yorkshire.

"Some striking facts are given with reference to the comparative costs of horse labour in Yorkshire. Farmers would do well to note the relatively cheaper cost of horse labour on large holdings as compared with small ones. Whereas the cost of horse labour, per working day, is given as 7s. 9d. in the case of holdings under 50 acres, the cost in the case of holdings of from 200/300 acres is shown to be only 3s. 11¼d. The significance of this is more readily seen by the fact that the cost of horse labour, per acre, in the case of the small holdings (under 50 acres) is shown to be £4 6s., while the cost in the case of the larger holdings (200/300 acres) is only 17s. 1¼d. The moral does not need much emphasis. Undoubtedly on many holdings there is a surplus of horses for the requirements of the arable land tilled and steps should be taken to adjust matters.

"The Report states the case in a nutshell:—'The land placed at the disposal of superfluous horses might more profitably be used for more productive purposes, as each unnecessary horse is keeping at least one cow or six sheep off the land, and consuming the produce of crops which otherwise would be available for sale.'

Popularise the Horse.

"The need for popularising the horse is manifest. The National Horse Association has shown that a comparison based upon actual costings of a large number of municipalities and commercial concerns in London and the Provinces proves that the horse is the cheaper form of transport for short distances. It is this fact which should be insistently proclaimed in and out of season. Agriculture

has superfluous horses. Industry needs cheaper transport. Statistics prove that for many departments of municipal work and for the ordinary town trade distribution, manufacturing, etc., a large portion of which is within a radius of four to six miles, the light horse vehicle is from 20 per cent. to 30 per cent. cheaper than the motor van, and the heavy horse vehicle with two horses has a similar advantage of the heavy motor-lorry.

"The horse-breeding industry, agriculture, and the distributing trades would all benefit if these facts were more widely recognised."

## County Councils Association and the Royal Veterinary College.

According to the *County Council's Association Official Gazette* of September, 1931, at a meeting of the Association held at the end of July, the following resolution was embodied in the report of the Agricultural Committee, which was adopted :—

> "That, in view of the undoubted value of veterinary science to the country at large and the agricultural community in particular, the Executive Council be recommended to advise the county councils to consider favourably the desirability of making, as part of their schemes for agricultural education and on such terms with regard to the training of local students or otherwise as they may consider appropriate, an annual grant towards the maintenance of the Royal Veterinary College."

The above resolution had been passed by the Agricultural Committee following consideration of the Report of the Deputation which waited upon the Ministry of Agriculture on June 22nd for the purpose of discussing the position of the Royal Veterinary College.

This report was as follows :—

Report of Interview with the Ministry of Agriculture and Fisheries.

"1.—Following upon the resolution (*see* Official Gazette, *May*, 1931, *page* 217) passed by the Executive Council at their April meeting, the Chairman of the Agricultural Committee (Mr. Dent) and Sir Merrik Burrell, Bt., C.B.E., waited upon the Ministry of Agriculture and Fisheries on June 22nd, 1931, for the purpose of discussing the position of the Royal Veterinary College.

"2.—In the unavoidable absence of the Minister, the Deputation was received by the Parliamentary Secretary (Earl De La Warr), who was accompanied by Mr. H. E. Dale, C.B., Principal Assistant Secretary.

"3.—Mr. Dent said it was understood that, since the interview was arranged, the position with regard to the provision of funds for the necessary reconstruction of the College was much less difficult, and therefore there was now no occasion for him to labour that aspect of the matter.

"4.—There remained, however, the question of subsequent maintenance, and, in this connection, it was desirable to draw attention to the supreme importance of veterinary science, not only as a means of preventing the very heavy losses incurred by the country at large and agriculturists in particular as the result of animal diseases, but also from the point of view of the inevitable reaction of such diseases upon public health.

"5.—Two considerations were therefore involved in the maintenance problem, first, the necessity of putting the Royal Veterinary College in possession of such annual income as would enable the Governors to provide all the essentials (including an adequate and properly remunerated technical staff) for a sound veterinary training for the large numbers of students wishing to enter the profession, and, secondly, the desirability of increasing and organising the facilities for veterinary research.

"6.—As the Association understood the position, however, the income of the College was extremely limited and must therefore be augmented substantially before the best use could be made of the proposed new buildings. Further, while it was recognised that, with the aid of the grants made by the Development Commissioners, excellent research work was being accomplished at various centres, it appeared to be beyond question that the existing facilities should be enlarged and co-ordinated.

"7.—It was accordingly suggested, as regards the maintenance of the College, that the Government's annual grant should be substantially increased and that the Ministry should consider from what other sources it would be feasible for them to suggest contributions.

"8.—It was further suggested, as regards research, that the Ministry should undertake at an early date a review of the whole position with a view to determining what improvements, both financial and administrative, were required.

"9.—Lord De La Warr agreed that, in the light of recent events, the question of the proper maintenance of the Royal Veterinary College was now of greater significance than that of capital requirements, and he stated that the Government had already decided, as an interim measure, to increase their grant to slightly more than £5,000 for this year. He also reminded the Deputation that the Government contemplated the establishment of an Agricultural Research Council, which would be able, amongst other functions, to co-operate with the Medical Research Council, and he stated that this step had been decided upon largely in consequence of the point to which attention had been drawn, namely, the close connection between public health and veterinary science. He also added that he was in agreement with the suggestion for a review of existing research facilities.

"10.—Lord De La Warr was then obliged to leave the meeting, and, in his absence, Mr. Dale said that the Ministry realised the unsatisfactory income position of the Royal Veterinary College, and stated that he would be glad to investigate the question of additional sources of revenue when the Agricultural Committee of the Association had had an opportunity of considering the matter in connection with the report of the Deputation."

## Traffic in Diseased Cows.

At a recent meeting of Tyrone Committee of Agriculture a letter was read from the Ministry of Agriculture declining to sanction payment for a cow which had died of tuberculosis prior to the arrival of the veterinary inspector who was to certify it under the Bovine Tuberculosis Order, stating that the owner of the cow had been negligent in reporting its condition.

Mr. Rowley Elliott, M.P., said the number of demands for compensation for diseased cows was abnormal. Most of the animals came over from other counties and were bought at a very small price. He knew of a case where a dealer received £18 for a diseased animal. Farmers who were unfortunate enough to have a tuberculous cow should get consideration, but men who bought cows at a small price knowing them to be tuberculous should not receive any consideration. The traffic in tuberculous cows should be stamped out.

It was decided to suggest to the Ministry that the law be altered so that a cow should be three months in possession of the owner before any compensation be granted.

## The Late Major M. P. Walsh.

Major M. P. Walsh, Royal Army Veterinary Corps, whose death at the age of 50 years, whilst proceeding to this country on leave from India, it was our sad duty to record last week, graduated in Dublin on December 13th, 1906. The deceased officer was gazetted to the Royal Army Veterinary Corps in the rank of Lieutenant on August 28th, 1907; promoted Captain, August 28th, 1912; Brevet-Major, June 3rd, 1919; substantive Major, August 28th, 1922; seconded to the Indian Continuous Service Cadre of the R.A.V.C. on November 1st, 1924.

Major Walsh served in France, Belgium, Gallipoli and Egypt during the Great War; was awarded the 1914 Star, British War Medal and Victory Medal. He held the appointment of A.D.V.S., Egyptian Expeditionary Force from September 4th, 1916, to April 21st, 1918, and was twice mentioned in Despatches.

Major Walsh leaves a widow to whom all officers of the Corps tender their deepest sympathy in her sad loss.

# Notes and News.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

## Diary of Events.

Oct. 19th.—N.V.M.A. Editorial Committee Meeting at 2 Verulam Buildings, Gray's Inn, W.C.1.

Oct. 20th.—Meetings of the Derbyshire Division, N.V.M.A., at Derby.

Oct. 23rd.—Meeting of the Lancashire Division, N.V.M.A., at Manchester.

Nov. 5th.—Central Division, N.V.M.A. Dinner-Dance at the Hotel Russell.

Nov. 6th.—Meeting of the Yorkshire Division, N.V.M.A., at Leeds.

Nov. 6th.—R.A.V.C. Old Comrades' Association Annual Meeting and Reunion Dinner.

## Papers presented to Congress, N.V.M.A.

Readers are informed that the Secretary, N.V.M.A., holds a small stock of papers presented to the Congress of the Association held at Norwich in August, and that copies can be obtained gratis upon application to him at 2, Verulam Buildings, Gray's Inn, W.C.1.

### Personal.

Mr. Eustace Montgomery, the Adviser on Animal Health to the Secretary of State for the Colonies, left England on the 15th instant for Northern and Southern Rhodesia, at the invitation of the Government of the latter country. He later proceeds to Nigeria, the Gold Coast, Sierra Leone, and the Gambia, and expects to return to London in March.

### Army Veterinary Service.

Regular Army.

July 31st.—Lieut.-Colonel A. J. Thompson (ret. pay) to be Lieut.-Colonel (August 1st) with seny., April 3rd, 1930.

Regular Army Reserve of Officers.

August 18th.—Lieut.-Colonel H. T. Ryan, D.S.O., F.R.C.V.S., having attained the age limit of liability to recall, ceases to belong to the Res. of Off. (August 17th).

August 28th.—Major F. S. Probyn, having attained the age limit of liability to recall, ceases to belong to the Res. of Off. (August 26th).

Captain K. J. S. Dowland, late R.A.V.C. and Army in India Res. of Off., to be Captain (May 21st).

. . . . . .

Movements of Officers.

Major J. Bell sailed for Egypt on September 26th, for a full tour of duty abroad.

Lieutenant L. W. Coulden sailed for India on September 26th, for a full tour of duty abroad.

Major J. J. Clune was posted to the Northern Command on September 28th, and is now doing duty at York.

Major P. F. Woodland was posted to the Aldershot Command for duty on September 30th.

Major G. W. Godwin sailed for Hong Kong on October 9th, for a full tour of duty abroad.

### H.M. Stationery Office Publications.

The undermentioned have been published recently. Copies can be purchased through any bookseller, or directly from H.M. Stationery Office, at the following addresses:—London: Adastral House, Kingsway, W.C.2, and 28, Abingdon Street, S.W.1; Cardiff: 1, St. Andrew's Crescent; Manchester: York Street; Edinburgh: 120, George Street.

| | Price Net. | Post Free. |
|---|---|---|
| | s. d. | s. d. |
| Civil Service (1929-31), Royal Commission on the:— | | |
| Minutes of Evidence:— | | |
| Appendices:— | | |
| XVII.—Selections from Statements received from Organisations not heard in oral evidence (63-71-0-0) | 5 6 | 5 8 |
| Medical Research Council: | | |
| Special Report Series:— | | |
| 159.—The Influence of Diet on Caries in Children's Teeth. Interim Report by the Committee upon Dental Disease. August, 1931. (45-5-59-0) | 0 6 | 0 7 |
| Bacteriology in Relation to Medicine, A System of:— | | |
| Vol. IX. 1931. (45-7-9-0) ... ... | 21 0 | 21 9 |
| Diseases of Animals:— | | |
| Report of Proceedings under the Diseases of Animals Acts for the Year 1930 (24-27-0-30) ... ... ... ... | 2 0 | 2 2 |
| Agricultural and Fisheries, Ministry of:— | | |
| Foot-and-mouth Disease Research Committee:— | | |
| Fourth Progress Report. August, 1931. (24-75-4-0) ... ... ... | 7 6 | 8 0 |

# Correspondence.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

### Lambing Sickness of Ewes and Liming.

To the Editor of The Veterinary Record.

Sir,—In the *New Zealand Journal of Agriculture*, Vol. 42, April 20th, 1931, we read under the heading of "A Brief Survey of Sheep Diseases in New Zealand," by C. S. M. Hopkirk, Wallaceville Veterinary Laboratory, and dealing with lambing sickness, that milk fever in ewes occurs seasonally in heavy milking ewes on rich pasture where there is any suggestion of deficiency of lime. In the same article, Hopkirk states that prevention lies in top-dressing the pasture with lime, or, where troughs are used to water the sheep, the keeping of lime in such troughs. A few handsful every fortnight (as practised at Ruakura State Farm) are a wonderful help in combating milk fever, parasites, etc.

In the excellent paper on "The Calcium and Phosphorus Supply of Dairy Cows," presented by Professor Linton to the N.V.M.A., we read: "The illuminating work of Little and Wright and Greig and Dryerre has naturally added interest, and perhaps importance, to this aspect of bovine nutrition, but between the discovery of a serum-calcium deficiency in milk fever cases and the establishment of a dietetic cause, there is a gulf yet to be bridged."

In the paper on "Some Observations on the Nature of Certain Diseases of Sheep," by Messrs. Bosworth and Glover, presented to the last N.V.M.A. Conference, we note that the writers comment on Hopkirk's recommendation by stating that he gives no data which would enable one to judge the value of the advice.

At the New Zealand Veterinary Conference at Wellington in July of this year, Hopkirk's attention was drawn to

the statement which appeared in the *New Zealand Journal of Agric.*, and on being challenged he offered no experimental evidence in support of his recommendation to lime.

The inference to be drawn from the preceding paragraphs is that Hopkirk's recommendation is not the logical outcome of carefully conducted scientific investigation but, in the present state of our knowledge, a mere speculation based upon an imperfect understanding of the true significance of the work of Greig and Dryerre and others. One further aspect of the proffered advice attracts attention—more perhaps as a matter of principle than as a point of doubtful accuracy, which it really is—and that is the general recommendation to lime. For the moment, it is immaterial whether this constitutes a true prophylactic measure or not. One's principal objection is to the vagueness and impractical nature of the advice. Experience, up to the present, indicates the comparative rarity of the disease. Is such prevalence sufficient to warrant extensive liming?

We would like to ask Mr. Hopkirk the following questions in regard to preventive treatment for lambing sickness:—

(1) What does the phrase " any tendency of deficiency of lime " mean?

(2) Is this a measured quantity or a guess based on personal observation?

Until scientific confirmation of this recommendation has been made these points are not so trivial as to be dismissed by sweeping recommendations to lime.

Yours faithfully,
Allan Leslie and H. J. Geddes.

Canterbury Agricultural College,
New Zealand.
*September 7th*, 1931.

## " Contribution to the Knowledge of Warble Flies."

To the Editor of The Veterinary Record.

Sir,—The abstract on warble flies, by J. T. E., given in *Veterinary Record* of July 18th is very interesting. It is not stated which species of Hypoderma was being dealt with by Gansser, but as *H. lineatum* is mostly found in the gullet in its larval stages, it is inferred that reference is made to that fly. The possibility of being parasitized by direct ingestion of plants " charged " with eggs has been thoroughly explored by Carpenter and his colleagues, and Bishopp and his associates. In their opinion ingestion is the most improbable method of infection.

Observations made by me and reported in my paper read before the Indian Science Congress at Nagpur might be interesting in connection with the latter part of the abstract. I have never found larvæ in the " upper air passages " and all available literature shows that no one else has found them in these situations. I have found larvæ of *Hypoderma lineatum* in the submucosa of the gullet as well as in the loose connective tissue on its outer aspect. It is stated in the abstract that the larvæ are only present in the connective tissue on the outer aspect of the organ. In the large number of cases seen by me larvæ were more frequently found on the submucosa than in the adventitia. It was mostly in the earlier part of the season that the larvæ were found in the adventitia, but even then the submucosa was never exempted. Further, on many occasions I found larvæ in the connective tissue overlaying the rumen.

Yours faithfully,
P. G. Malkani.

Bihar and Orissa Veterinary College,
Patna (India).
*September 17th*, 1931.

## " Minimum Price Restriction of ' Grade A' Milk."

To the Editor of The Veterinary Record.

Sir,—With reference to Mr. D. E. Wilkinson's letter, I should like to ask him to give me some proof that the Ministry of Health has ever fixed a minimum price for " Grade A " milk.

Is Mr. Wilkinson aware that " Grade A " milk is the *lowest* of the graded milks?

I do not quite understand what he means by graded and non-graded milk and also by saying that all farmers, with one exception, have assured him that no additional monetary outlay is necessary for the production of graded milk.

Yours faithfully,
Graham Rees-Mogg.

Regent's Park Barracks,
N.W.

# Diseases of Animals Acts, 1894 to 1927.

## SUMMARY OF RETURNS.

| Period. | Anthrax. | | Foot-and-Mouth Disease. | | Parasitic Mange.§ | | Sheep Scab. | Swine Fever. | |
|---|---|---|---|---|---|---|---|---|---|
| | Outbreaks confirmed. | Animals attacked. | Outbreaks confirmed. | Animals slaughtered as diseased or exposed to infection. | Outbreaks reported by the Local Authorities. | Animals attacked. | Outbreaks confirmed. | Outbreaks confirmed. | Swine slaughtered. |
| | No. | No. | No. | No. | No. | No. | No. | No. | No. |
| Period 16 to 30 September, 1931 | 15 | 15 | 2 | 176 | 4 | 5 | 4 | 83 | 35 |
| Corresponding period in— | | | | | | | | | |
| 1930 ... | 9 | 10 | 2 | 140 | 6 | 9 | 4 | 75 | 45 |
| 1929 ... | 11 | 11 | 1 | 46 | 8 | 9 | 1 | 165 | 95 |
| 1928 ... | 17 | 20 | 6 | 1,072 | 1 | 1 | 13 | 33 | 7 |
| Total 1 Jan. to 30 Sept., 1931 | 369 | 412 | 96 | 10,091 | 117 | 213 | 219 | 1,463 | 607 |
| Corresponding period in— | | | | | | | | | |
| 1930 ... | 282 | 311 | 7 | 299 | 177 | 269 | 294 | 1,850 | 799 |
| 1929 ... | 333 | 415 | 27 | 2,685 | 171 | 338 | 374 | 1,790 | 1,056 |
| 1928 ... | 417 | 479 | 113 | 10,001 | 231 | 443 | 364 | 1,175 | 597 |

Note.—The figures for the current year are approximate only.